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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,018	03/10/2004	Tsuyoshi Yamada	119051	2130

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
MENEFEE, JAMES A	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/796,018	YAMADA ET AL.	
	Examiner	Art Unit	
	James A. Menefee	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9 and 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☒ Claim(s) *9 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

By amendment filed 6/16/2006, claims 1-6 are amended, claims 7-8 cancelled, and claims 9-10 added. Claims 1-6 and 9-10 are pending.

Claim Objections

In claim 9, second to last line, "resonation" should read --resonance-- to be consistent with the rest of the claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, last three lines, it is unclear how the light of the second peak wavelength is converted "by the second wavelength converting element by the first wavelength converting element." It is believed that "by the first wavelength converting element" should be deleted, as the conversion is done only by the second wavelength converting element.

Claims 3-6 are rejected merely because they depend on claim 2, thus including the above problem.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada (US 2002/0027932) in view of Oka et al. (US 5,289,479), and further in view of Hale et al. (Applied Optics, 12/15/1988), and further in view of either Vrehen (US 6,596,984) or Snoeren (US 5,774,269).

Regarding claim 1, Takada discloses in Figs. 1-2 an ophthalmic laser photocoagulation apparatus (par. [0014]) capable of emitting laser beams of a plurality of different wavelengths including a solid state laser medium 11 made of an Nd:YAG crystal (par. [0023]) which emits light of a plurality of different peak wavelengths (par. [0024]), a resonance optical system which resonates the emitted light of the plurality of peak wavelengths and converts respective light to second harmonic light to oscillate the laser beams of the plurality of different wavelengths.

There is not disclosed a quarter wave plate. Oka teaches that in a second harmonic generating system it is advantageous to include a quarter wave plate, and it would have been obvious to one skilled in the art to use this element because it causes the harmonic output to be output in a stable condition, as taught by Oka. Col. 2 lines 9-21.

It is not taught by Takada or Oka that the quarter wave plate is constructed of a combination of quartz and magnesium fluoride. Hale teaches such a quarter wave plate is known.

See Part IV (p. 5150-5151). It would have been obvious to one skilled in the art to use such a wave plate because it will be temperature compensated, as taught by Hale.

It is not taught by Takada, Oka, or Hale that the quarter wave plate include an AR coating. It is well known to use AR coatings on quarter wave plates in order to reduce losses in the system caused by reflections at the wave plate face. See Vrehen col. 8 lines 11-14 (conventional to include AR coating on quarter waveplate to prevent reflections); Snoeren col. 5 lines 14-17 (known to use AR coating on quarter wave plate to reduce losses due to reflections. That is, the AR coating will enhance transmittance to the light that impinges upon it. It would have been obvious to one skilled in the art to include such an AR coating to reduce losses, as taught by these references in the sections cited above. See also the other references cited but not relied upon at the Conclusion section below.

The quarter wave plate, deemed obvious above, would obviously be included in the common optical path, as one skilled in the art would recognize that such a placement would allow only one wave plate to be needed, rather than a separate plate corresponding to each wavelength converting element. Additionally, Oka teaches that the quarter wave plate should be placed in the fundamental beam path, col. 2 lines 16-18, thus the ideal position would be in the common optical path—the place where the fundamental beam is propagating most. Since the wave plate will be placed in the common path of all of the peak beams, one skilled in the art would have included the AR coating to enhance transmittance to all of that light, i.e. the plurality of the peak wavelengths to be converted, as claimed.

Regarding claim 2, Takada includes a first resonance optical system (along L1,L2) which includes a first wavelength converting element 13a and resonates the emitted light of a first peak wavelength and converts light of the first peak wavelength to second harmonic light by the first wavelength converting element 13a oscillate a first laser beam, and

a second resonance optical system (along L1,L2,L3) which includes a second wavelength converting element 13b and uses a part of an optical path L1,L2 in common with the first resonance optical system and resonates the emitted light of a second peak wavelength and converts the light of the second peak wavelength to second harmonic light by the second wavelength converting element to oscillate a second laser beam. The quarter wave plate would obviously be included in the common optical path, as described in the rejection of claim 1 above.

Regarding claims 3-4, Takada's mirrors 14e,14f are movable with respect to the common use optical path and selectively insertable in and removable from the common use optical path to select the particular resonance optical system.

Regarding claim 6, Takada's output mirror 15 is on the common use path and reflects at the first and second peak wavelengths and transmits at the first and second (converted) wavelengths. See par. [0025] last sentence.

Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takada, Oka, Hale, and either Vrehen or Snoeren as applied to claim 1 above, and further in view of Kuizenga et al. (US 5,249,192). The limitations of parent claim 1 are taught as noted above, and Takada

discloses an insertion and removal unit inserting and removing the reflection mirror in and from the common use path, but does not disclose that this is done by rotating the mirror without changing an angle of a reflection plane of the mirror with respect to the common use path.

Kuizenga teaches that in a laser system, a mirror can be implemented using a rotating reflector that may alternatively be rotated so that the reflector reflects the incident beam or lets it pass. See Figs. 1-3, 6, 14. Since the reflector is a rotating wheel as shown in Figs. 6,14 it will rotate the individual mirror without changing an angle of reflection plane. It would have been obvious to one skilled in the art to utilize such a mirror in place of the mirrors of Takada because it avoids the alignment and mechanical complexity of translating mirrors found in the prior art (such as those in Takada). See col. 2 line 64-col. 3 line 5.

Allowable Subject Matter

Claims 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

There is not taught or disclosed in the prior art an ophthalmic laser photocoagulation apparatus as claimed, including the first through third resonance systems as claimed, where an insertion and removal unit which includes a shaft on which the first and second reflection mirrors are attached at different axial angles to selectively insert and remove the reflection mirrors such that at most one of the mirrors is in the common use optical path.

While Kuizenga has been used to teach the similar limitation of claim 5, claim 9 differs in that the insertion unit of claim 9 includes two reflection mirrors. There is no suggestion of

modifying Takada by Kuizenga to get an insertion and removal unit including a shaft on which the first and second reflection mirrors are attached at different axial angles as claimed. That is, while the insertion of one of the mirrors (such as 14e of Takada) could be done by the insertion unit of Kuizenga, there is no suggestion to do the insertion/removable of both of Takada's mirrors 14e,14f by Kuizenga's unit.

Response to Arguments

Applicant's arguments filed 6/16/2006 ("Remarks") have been fully considered but they are not persuasive.

Applicant argues that Oka's wave plate only corresponds to a particular wavelength, therefore it is not for a wide band. Remarks at 6. This argument is not persuasive. Oka teaches that it is advantageous to include a wave plate in a harmonic generating system such as applicant's, as described above. Even if Oka is only applicable to a single wavelength, Takada is applicable to a plurality of wavelengths, a wide band. Since the wave plate would be placed in the wide band of Takada, it is only natural that one skilled in the art would use a wave plate that would actually work to the best advantage—one that would work in a wide band over the entire range of Takada's wavelengths. It is well within the level of one skilled in the art to take Oka's teachings that wave plates are advantageous and choose a wave plate that would work best with the primary reference. One skilled in the art would not look at the differences in the references and give up; one skilled in the art would instead use a wave plate that would work in Takada's system.

Applicant argues further that the art of record does not suggest the limitations added by amendment concerning the AR coating on the ¼ wave plate. Remarks at 7. The inclusion of AR coatings on wave plates is well known in the art as taught in the references cited herein, and the rejections are modified in light of these teachings. This modification is only due to applicant's amendment therefore this action is made final.

Conclusion

See also Billman (US 5,734,504, col. 6 lines 5-10), Zeidler (US 5,268,775, col. 5 lines 35-38), and Nikolov et al. (US 2004/0095637, par. [0059]), all teaching that wave plates typically have AR coatings to reduce reflections and/or losses.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James Menefee
Primary Examiner
August 29, 2006